

NEW DOLICHOPODIDAE FROM CALIFORNIA AND OREGON (DIPTERA)¹

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This report includes descriptions of several apparently undescribed Dolichopodidae found among specimens submitted to the writer for identification and in collections taken by the writer in California and Oregon.

***Pelastoneurus barri* NEW SPECIES**

Male. Length, 4.5 mm. Face wide, its width equaling the length of third segment of middle tarsi; silvery pollinose, the pollen heavier along the orbits, thinner in the center and in upper concave portion where the bronze ground color is evident. Front bronze or blue-violet, depending on the angle of reflection, lightly grayish pollinose. Palpi silvery pollinose. First and second segments of antennae dark yellow, tending toward brown; third segment dark brown to black, as broad as long, the apex evenly rounded; arista feathered with rather long hairs. Postocular setae wholly black.

Mesonotum black when viewed from the side, of a beautiful dark violet color when viewed from above; a patch of silvery pollen above the base of the wings and in the humeral depression. Pleurae dark blue with bronze reflections. Abdomen violet, the incisures narrowly blackened, with silvery pollinose areas laterally. Hypopygium black; lamellae black, rounded-triangular, tapering to basal point of attachment, fringed with long black bristles; central organ horn-like, flattened, curved, the tip bluntly rounded.

Coxae and legs black; the fore tibiae, fore and middle basitarsi brownish. Hairs and bristles of fore coxae and legs wholly black. Hind femora with longer hairs on lower portion. Comparative lengths of segments of fore tarsi in the ratio

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of 15-7-5-4-5; of middle tarsi 24-15-12-8-7; of hind tarsi 20-27-18-10-8. Halteres and calypters yellow, the latter with black setae.

Wings tinged with brown; fourth vein bowed forward rather abruptly at apical third; cross-vein about the same length as distal segment of fifth vein.

FEMALE. Similar to male in general coloration except abdomen which is dark bronze; face nearly twice as wide as in male, with conspicuous longitudinal brownish area in middle; distal segment of fourth vein less abruptly curved.

Described from 23 males and 13 females collected by Dr. W. F. Barr at Tecopa Hot Springs, Inyo County, California, May 16, 1965. Holotype male and allotype female in California Academy of Sciences; paratypes in U. S. National Museum, University of Idaho, and collection of the author.

Pelastoneurus barri n. sp. closely resembles *P. aldrichi* Van Duzee in coloration. The two species are readily separated by the shape of the central horn-like hypopygial organ which in *aldrichi* is abruptly bowed near apical third, strongly tapered toward the tip and with apex sharply pointed.

Neurigona californica NEW SPECIES

MALE. Length, 4 mm. Face wide for a male of this genus, its width about equal to the diameter of fore basitarsus, the sides parallel, bright silvery pollinose. Front grayish pollinose, in some lights more yellowish pollinose. Palpi white, with white hairs and bristles on upper surface. Antennae yellow; third segment brown on apical half, as broad as long, the apex broadly rounded. Postocular setae yellowish.

Metanotum and scutellum densely yellowish pollinose, the blue ground color scarcely evident. Pleurae white pollinose; metapimeron yellow. Abdomen metallic blackish with bronze reflections, the incisures narrowly brownish; marginal bristles of first segment pale laterally, black above; third and fourth segments with long, stiff, pale cilia ventrally; fifth segment with large protruding ventral sheath covering most of the hypopygium. Base of hypopygium brownish, the internal organs black and polished, the apical membranous flaps pale, densely clothed with pale setae. Halteres and calypters white, the latter with long pale setae.

Coxae, femora, tibiae, and tarsi yellowish, the apical 2 or 3 segments of tarsi somewhat infuscated. Fore coxae with a few pale hairs on anterior surface, and with 4 large yellow bristles near tip. Middle coxae with black hairs on anterior surface, two black bristles laterally followed by 4 long pale bristles at apex. Hind coxae with strong black bristle laterally at basal third. Middle and hind femora without conspicuous setae on lower edge. Fore tarsi of plain structure. Hind basitarsus with a dense comb of short yellow bristles on inner side at tip. Comparative lengths of fore tibia in ratio of 20, segments of fore tarsi 20-12-6-3-3; of middle tibia as 32, middle tarsi as 24-8-6-4-3; of hind tibia as 44, hind tarsi as 12-16-8-4-4.

Wings tinged with brown; veins blackish; distal segment of fourth vein gradually and evenly bowed forward at its middle, parallel with 3rd vein on last portion, ending in the apex of the wing; comparative lengths of cross-vein and last section of 5th vein in ratio of 9 to 26.

Described from one male collected by Dr. P. H. Arnaud, Jr., at Greyhound Rock, Santa Cruz County, California, May 22, 1952. Holotype male in California Academy of Sciences insect collection.

Neurigona californica n. sp. closely resembles both *N. albospinosa* Van Duzee and *N. kesseli* Hendrickson in general appearance and coloration. *N. albospinosa* differs from *N. californica* n. sp. in possessing an abundance of long pale hairs on anterior surface of fore coxae, in having all hairs and bristles of middle and hind coxae pale, hind coxae with a large pale bristle laterally, third and fourth abdominal sternites devoid of long stiff bristles, and fifth abdominal sternite without large ventral sheath. *N. kesseli* is described as having black setae on calypters; second and third segments of antennae black; third and fourth abdominal sternites devoid of long, pale, stiff setae; and presence of conspicuous comb-like fringe of short stiff black bristles at tip of hind basitarsus.

Melanderia californica NEW SPECIES

MALE. Length, 4 mm. Face silvery pollinose, the blue-violet ground color evident, broad, narrowed immediately below the antennae, the lower portion much expanded, nearly twice as broad as the middle portion. Front black, opaque immediately above the antennae, the upper portion and occiput submetallic, blue. Palpi black, opaque, densely clothed with long black hairs. Postocular setae and whiskers black. Proboscis greatly enlarged, fleshy, bilobed, the side pieces resembling mandibles. Antennae black; third segment scarcely longer than wide, the tip broadly rounded; arista dorsal, inserted slightly before the apex.

Mesonotum densely brownish pollinose, the ground color dark green in some lights, bluish in others. Scutellum with one pair of well developed marginal bristles. Pleurae densely grayish pollinose, the green ground color scarcely evident; a row of four short, sharp bristles in front of posterior spiracle. Halteres yellow; calypters brownish yellow with delicate black setae.

Abdomen concolorous with pleurae, but with greenish ground color more evident, the hairs short, black. Hypopygium black, hypopygial lamellae black, elongate-oval, as long as the first segment of fore tarsi.

Legs black; anterior surface of fore coxae sparsely clothed with long, delicate, black hairs; fore tibiae bent near the apex, with concave depression on inner surface at the bend, the tip somewhat enlarged; tarsi of plain structure, the apical

segments noticeably flattened. Lengths of segments of fore tarsi in the ratio of 15-8-5-4-6; of middle tarsi as 22-10-5-5-7; of hind tarsi as 17-16-7-5-7.

Wings darkened, smoky-hyaline; veins black; first vein short; second vein running close to the costa and merging with it near the apex of wing.

FEMALE. Similar to male in coloration, but differing as follows: fore femora not thickened and without stout bristles on lower edge; face broader; fore tibiae not bent near apex.

Described from 6 males and 8 females collected by the author in salt marsh along the ocean near San Diego, California, August 10, 1966. Holotype male and allotype female deposited in the California Academy of Sciences; paratypes in the U. S. National Museum, and the collection of the author.

This new species is closely related to *Melanderia curvipes* (Van Duzee), from which it differs by the much larger and broader hypopygial lamellae, in the stout bristles along lower edge of fore femora, and in having the first and second segments of hind tarsi of nearly equal length. In *M. curvipes* the second segment of hind tarsi is about two-thirds the length of the first segment; also, in this species the fore basitarsus is conspicuously bowed and possesses a dense cluster of short, stiff bristles on a slight protuberance at the inner basal surface.

Tachytrechus mchughi NEW SPECIES

MALE. Length, 4.3 mm. Face about as long as height of eye, its width immediately below antennae about one-third the width near tip; grayish to golden-gray in color, depending upon the angle of reflection. Front green, lightly grayish pollinose. Antennae dark yellow, the third segment darker on apical third. Arista wholly black, about as long as the face, ending in an elongate, spear-shaped, sharp point. Postocular setae wholly black.

Metanotum metallic green with bronze reflections, lightly grayish pollinose; pleurae densely grayish pollinose. Abdomen metallic green with narrow bronze incisures, the lateral and ventral portions grayish pollinose. Hypopygium green, with yellowish pruinose patches near the root, and with long yellow hairs which contrast with the black hairs and bristles of the other segments; lamellae bright golden yellow, slightly broader than long, somewhat square, the inner basal margin with long, dense, golden setae, the remainder of the margin with sparse black setae, the outer surface with a few scattered black setae. Halteres and calypters yellow, the latter with black setae.

Coxae concolorous with pleurae, the anterior pair yellowish on apical third, all with black hairs and bristles on anterior surface. Femora of plain structure, black on basal two-thirds, the apical portions yellow, middle and hind pairs with notice-

ably longer setae along lower edges. Fore tibiae yellow, slightly infuscated on apical third, with two irregular rows of long bristles on the front and a row of four evenly spaced bristles on outer side. Middle and hind tibiae narrowly yellow at base, the remaining portion dark brown to black. Tarsi black; length of segments of fore tarsi in the ratio of 15-7-5-3-4; of middle tarsi as 30-13-10-5-5; of hind tarsi as 25-23-13-8-8.

Wings grayish hyaline, without infuscation; distal segment of 4th vein gently bowed at basal third; length of the cross-vein and the last section of 5th vein in the ratio of 15 to 14.

Described from 2 males collected by Mr. R. A. McHugh at La-tourelle Falls, Oregon, August 2, 1962. Holotype male deposited in California Academy of Sciences; paratype male in collection of the author.

Tachytrechus mchughi n. sp. closely resembles *T. boharti* Harmston in general coloration and in the shape of the arista. In *T. boharti* the hypopygial lamellae are about twice as long as broad with inner basal portion sparsely clothed with black setae; the base of the hypopygium is sparsely clothed with black hairs; the apical thickened portion of arista is much broader; and the distal segment of the 4th vein is strongly bowed at the middle.

Tachytrechus duplicatus NEW SPECIES

MALE. Length, 4.5 mm. This new species is similar to *T. mchughi* in general coloration of body and legs, differing as follows: Middle and hind tibiae yellow, the tips slightly infuscated. Fore tibiae with a row of about 8 strong bristles on outer side (4 bristles in *mchughi*); arista longer, ending in an elongate oval lamella which tapers to a pointed base, paler at point of attachment. Hypopygial lamellae larger than in *mchughi*, the margin evenly and heavily ciliated, but without the dense cilia along basal inner portion. Comparative length of segments of fore tarsi in the ratio of 15-7-5-4-5; of middle tarsi as 30-14-10-8-8; of hind tarsi as 25-25-15-10-8.

Venation and color of wings similar to *mchughi*.

Described from one male collected by the author at Baker, Oregon, July 25, 1965. Holotype male in California Academy of Sciences.

2.0162 New Dolichopodidae from California and Oregon (Diptera)

ABSTRACT.—Five new species of Dolichopodidae (Diptera) are described. The new species from California are *Pelastoneurus barri* n. sp., *Neurigona californica* n. sp., and *Melanderia californica* n. sp.; new species from Oregon are

Tachytrechus mchughi n. sp. and *Tachytrechus duplicatus* n. sp.—F. C. Harmston, U. S. Public Health Service, Fort Collins, CO 80521.

Descriptors: Diptera; Dolichopodidae; California; *Pelastoneurus barri*, n. sp.; *Neurigona californica*, n. sp.; *Melanderia californica*, n. sp.; Oregon; *Tachytrechus mchughi*, n. sp.; *Tachytrechus duplicatus*, n. sp.

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18. Techniques

PHOTOGRAPHY FOR SCIENTIFIC PUBLICATION, by Alfred A. Blaker. San Francisco: W. H. Freeman and Co. 1965. xii + 158 p. Cloth. \$8.00

This handbook provides a source of useful and practical information about photography for those persons who need to make pictures to illustrate, articles to be submitted for scientific publication. The main consideration of the text is on black and white still photography—though there is a chapter on color work. The author obviously has had experience with insect photography—as there are some excellent insect photographs as examples. The book provides a logical sequence of instruction in photography for scientific purposes and a handy source of information on methods of photographing specific subjects. This is a valuable source book for all biologists and photographers.—*Ed.*

A PRIMER OF POPULATION BIOLOGY, by E. O. Wilson and W. H. Bossert. Stamford (Conn.): Sinauer Associates. 1971. 192 p. Paper \$3.95

Designed to be self-teaching, the book shows how to apply simple mathematical models in population biology, shows how to construct such models, and provides a sense of the creative work in this field. Numerical problems throughout the text enable the reader to test his growing mastery of the subject. Many advanced topics are introduced at the elementary level without loss of rigor: genetic drift, measurement of rates of evolution, competition theory, reproductive value, and the theory of species equilibrium. Systematic biologists at all levels of attainment will profit from this book.—*Ed.*

SYSTEMS ANALYSIS AND SIMULATION IN ECOLOGY, by B. C. Patten (ed.). New York: Academic Press, 1971. Vol. 1, xv + 607 p. Cloth \$27.50.

The first comprehensive and accurate picture of growing applications of systems science and computer technology applied to ecology is presented in this volume. It describes, for the elementary to intermediate technical reader, how to model both small- and large-scale environmental systems, and provides numerous examples of applications ranging from dynamics of cell growth to energy and material flows in terrestrial, freshwater, and marine ecosystems.

Ecologists, environmental scientists of all kinds, limnologists, marine biologists, foresters, economists, sanitary engineers, bio-engineers, systems scientists, and simulation specialists will find this book to be an accurate and meaningful portrayal of the current state of the exciting new field of systems ecology.—*Ed.*